

AP20 Rec'd PCT/PTO 13 JUL 2006

NEB-236-PCT.ST25.txt
SEQUENCE LISTING

<110> New England Biolabs, Inc.
Guan, Chudi
Kumar, Sanjay
Kucera, Rebecca

<120> Modulation of Enzyme Activity by Changing Reciprocal
Stereo-Geometric Positions of Two Catalytic Centers in an Enzyme

<130> NEB-236-PCT

<150> 60/524,123

<151> 2003-11-21

<160> 25

<170> PatentIn version 3.2

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<211> 450

<212> DNA

<213> unknown

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gtgccttatg taattccggc gagcaatcac acttacactc cagacttctt acttccaaac	180
gggtatattcg ttgagacaaa gggctctgtg gaaagcgatg atagaaagaa gcacttatta	240
attagggagc agcaccgccga gctagacatc cgtattgtct tctcaagctc acgtactaag	300
ttatacaaag gttctccaac gtcttatgga gagttctgcg aaaagcatgg tattaagttc	360
gctgataaac tgatacctgc tgagtggata aaggaacca agaaggaggt cccctttgat	420
agattaaaaa ggaaaggagg aaagaaataa	450

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<220>

<223> primer

<400> 2

cccgaattca tggcaggtta cggcgct	27
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<210> 3

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<220>

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<223> primer

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<210> 5
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<212> DNA
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<223> primer<400> 5
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<210> 7
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<212> DNA
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<223> oligonucleotide<400> 7
agtgtaaagtg tgattgcacg caattacata aggcacttt

39

<210> 8
<211> 36
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<223> oligonucleotide

<400> 8

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aaagtcgctt atgtaattag caatcacact tacact 36

<210> 9
 <211> 36
 <212> DNA
 <213> unknown

<220>
 <223> oligonucleotide

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 agtgtaagtg tgattgctaa ttacataagg cacttt 36

<210> 10
 <211> 40
 <212> DNA
 <213> unknown

<220>
 <223> oligonucleotide mixture

<220>
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 <222> (24)..(24)
 <223> n is a, c, g, or t

<400> 10
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 <211> 40
 <212> DNA
 <213> unknown

<220>
 <223> oligonucleotide mixture

<220>
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 <222> (17)..(17)
 <223> n is a, c, g, or t

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 agtgtaagtg tgattantgg gaatttacat aaggcacttt 40

<210> 12
 <211> 149
 <212> PRT
 <213> unknown

<220>
 <223> enterobacteria phage T7

<400> 12

Met Ala Gly Tyr Gly Ala Lys Gly Ile Arg Lys Val Gly Ala Phe Arg
 1 5 10 15

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Ser Gly Leu Glu Asp Lys Val Ser Lys Gln Leu Glu Ser Lys Gly Ile
 20 25 30
 Lys Phe Glu Tyr Glu Glu Trp Lys Val Pro Tyr Val Ile Pro Ala Ser
 35 40 45
 Asn His Thr Tyr Thr Pro Asp Phe Leu Leu Pro Asn Gly Ile Phe Val
 50 55 60
 Glu Thr Lys Gly Leu Trp Glu Ser Asp Asp Arg Lys Lys His Leu Leu
 65 70 75 80
 Ile Arg Glu Gln His Pro Glu Leu Asp Ile Arg Ile Val Phe Ser Ser
 85 90 95
 Ser Arg Thr Lys Leu Tyr Lys Gly Ser Pro Thr Ser Tyr Gly Glu Phe
 100 105 110
 Cys Glu Lys His Gly Ile Lys Phe Ala Asp Lys Leu Ile Pro Ala Glu
 115 120 125
 Trp Ile Lys Glu Pro Lys Lys Glu Val Pro Phe Asp Arg Leu Lys Arg
 130 135 140
 Lys Gly Gly Lys Lys
 145

<210> 13
 <211> 151
 <212> PRT
 <213> unknown

<220>
 <223> yersinia pestis phage phiA1122

<400> 13

Met Ala Gly Thr Tyr Ala Ala Arg Gly Ile Arg Lys Val Gly Thr Phe
 1 5 10 15
 Arg Ser Gly Leu Glu Asp Lys Val Ser Lys Gln Leu Glu Gly Lys Gly
 20 25 30
 Ile Lys Phe Asp Tyr Glu Leu Trp Lys Ile Pro Tyr Val Val Pro Ala
 35 40 45
 Ser Asn His Val Tyr Thr Pro Asp Phe Leu Leu Pro Asn Gly Ile Phe
 50 55 60

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Ile Glu Thr Lys Gly Leu Trp Glu Ser Asp Asp Arg Lys Lys His Leu
65 70 75 80

Leu Ile Arg Glu Gln Phe Pro Glu Leu Asp Ile Arg Leu Val Phe Ser
85 90 95

Ser Ser Arg Thr Lys Leu Tyr Lys Gly Ser Pro Thr Ser Tyr Gly Glu
100 105 110

Trp Cys Glu Lys His Gly Ile Leu Phe Ala Asp Lys Leu Ile Pro Val
115 120 125

Glu Trp Leu Lys Glu Pro Lys Lys Glu Val Pro Phe Asp Arg Leu Lys
130 135 140

Gln Ala Lys Gly Gly Lys Lys
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<210> 14
<211> 153
<212> PRT
<213> unknown

<220>
<223> bacteriophage phiYe03-12

<400> 14

Met Ala Gly Ala Tyr Ala Ala Arg Gly Val Arg Lys Val Gly Ala Phe
1 5 10 15

Arg Ser Gly Leu Glu Asp Lys Val Ser Lys Gln Leu Glu Ser Lys Gly
20 25 30

Ile Lys Phe Asp Tyr Glu Leu Trp Arg Ile Pro Tyr Val Ile Pro Ala
35 40 45

Ser Asp His Leu Tyr Thr Pro Asp Phe Leu Leu Pro Asn Gly Ile Phe
50 55 60

Ile Glu Thr Lys Gly Leu Trp Asp Ser Asp Asp Arg Lys Lys His Leu
65 70 75 80

Leu Ile Arg Glu Gln His Pro Glu Leu Asp Ile Arg Leu Val Phe Ser
85 90 95

Ser Ser Arg Ser Lys Leu Tyr Lys Gly Ser Pro Thr Ser Tyr Ala Glu
100 105 110

NEB-236-PCT.ST25.txt

Trp Cys Glu Lys His Gly Ile Leu Phe Ala Asp Lys Leu Ile Pro Val
 115 120 125

Glu Trp Leu Lys Glu Pro Lys Lys Glu Val Pro Phe Asp Lys Phe Lys
 130 135 140

Thr Lys Lys Gly Val Lys Lys Asn Gly
 145 150

<210> 15

<211> 152

<212> PRT

<213> Bacteriophage T3

<400> 15

Met Ala Gly Ala Tyr Ala Ala Arg Cys Thr Gln Gly Arg Ala Phe Arg
 1 5 10 15

Ser Gly Leu Glu Asp Lys Val Ser Lys Gln Leu Glu Ser Lys Gly Ile
 20 25 30

Lys Phe Asp Tyr Glu Leu Trp Arg Ile Pro Tyr Val Ile Pro Glu Ser
 35 40 45

Asp His Leu Tyr Thr Pro Asp Phe Leu Leu Pro Asn Gly Ile Phe Ile
 50 55 60

Glu Thr Lys Gly Leu Trp Asp Ser Asp Asp Arg Lys Lys His Leu Leu
 65 70 75 80

Ile Arg Glu Gln His Pro Glu Leu Asp Ile Arg Leu Val Phe Ser Ser
 85 90 95

Ser Arg Ser Lys Leu Tyr Lys Gly Ser Pro Thr Ser Tyr Gly Glu Trp
 100 105 110

Cys Glu Lys His Gly Ile Leu Phe Ala Asp Lys Leu Ile Pro Val Ala
 115 120 125

Gly Val Lys Glu Pro Lys Lys Glu Val Pro Phe Asp Lys Phe Lys Thr
 130 135 140

Lys Lys Gly Val Lys Lys Asn Gly
 145 150

<210> 16

<211> 147

<212> PRT

<213> unknown

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<220>

<223> pseudomonas phage gh-1

<400> 16

Met Ala Tyr Ala Gly Pro Lys Gly Ala Arg Thr Gly Ala Phe Arg Ser
 1 5 10 15

Gly Leu Glu Asp Arg Asn Ala Lys His Met Asp Lys Leu Gly Val Lys
 20 25 30

Tyr Asp Phe Glu Arg Phe His Ile Asn Tyr Val Val Pro Ala Arg Asp
 35 40 45

Ala Lys Tyr Thr Pro Asp Phe Val Leu Ala Asn Gly Ile Ile Ile Glu
 50 55 60

Thr Lys Gly Ile Trp Glu Val Asp Asp Arg Lys Lys His Leu Leu Ile
 65 70 75 80

Arg Glu Gln Tyr Pro Asp Leu Asp Ile Arg Leu Val Phe Ser Asn Ser
 85 90 95

Asn Ser Lys Ile Tyr Lys Gly Ser Pro Thr Ser Tyr Ala Asp Phe Cys
 100 105 110

Thr Lys His Gly Ile Gln Phe Ala Asp Lys Leu Val Pro Arg Asp Trp
 115 120 125

Leu Lys Glu Ala Arg Lys Glu Ile Pro Gln Gly Val Leu Val Pro Lys
 130 135 140

Lys Gly Gly
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<210> 17

<211> 141

<212> PRT

<213> unknown

<220>

<223> pseudomonas putida KT2440

<400> 17

Met Gly Leu Lys Tyr Gly Phe Arg Ser Gly Leu Glu Glu Arg Ala Ala
 1 5 10 15

Asp Gln Leu Thr Ala Val Gly Met Gly Phe Thr Phe Glu Ser Leu Val
 20 25 30

NEB-236-PCT.ST25.txt

Val Pro Tyr Thr Arg Pro Ala Lys Val His Lys Tyr Thr Pro Asp Phe
35 40 45

Ala Leu Ala Asn Gly Ile Ile Val Glu Thr Lys Gly Arg Phe Leu Thr
50 55 60

Glu Asp Arg Gln Lys Gln Leu Leu Val Lys Ala Gln His Pro Glu Leu
65 70 75 80

Asp Val Arg Phe Val Phe Ser Asn Ser Lys Thr Lys Ile Asn Lys Arg
85 90 95

Ser Thr Thr Thr Tyr Ala Asp Trp Cys Ser Lys Asn Gly Phe Gln Tyr
100 105 110

Ala Asp Lys Leu Val Pro His Ala Trp Leu Asn Glu Pro Val Asn Glu
115 120 125

Ala Ser Leu Ser Ile Ile Lys Gly Leu Ser Lys Glu Lys
130 135 140

<210> 18
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<213> unknown

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<223> roseophage SI01

<400> 18

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Tyr Arg Ser Gly Leu Glu Glu Gln Thr Ala Lys Asp Leu Lys Lys Arg
20 25 30

Lys Val Leu Phe Thr Tyr Glu Glu Thr Lys Ile Lys Trp Leu Asp Ser
35 40 45

Lys Val Arg Thr Tyr Thr Pro Asp Phe Val Leu Pro Asn Gly Val Ile
50 55 60

Ile Glu Thr Lys Gly Arg Phe Val Ala Ala Asp Arg Arg Lys His Leu
65 70 75 80

Glu Ile Gln Lys Gln Phe Gly Thr Leu Tyr Asp Ile Arg Phe Val Phe
85 90 95

NEB-236-PCT.ST25.txt

Thr Asn Ser Lys Ala Lys Leu Tyr Lys Gly Ala Lys Ser Ser Tyr Ala
 100 105 110

Asp Trp Cys Asn Lys His Gly Phe Leu Tyr Ala Asp Lys Thr Ile Pro
 115 120 125

Glu Asp Trp Leu Asn Glu
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<220>
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<210> 20
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<220>
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 <222> (9)..(9)
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<210> 21
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 <223> mismatch

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<221> misc_feature
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<210> 24
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<220>
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<400> 24

Met Ala Gly Tyr Ser Ala Lys Gly Ile Arg Lys Val Gly Ala Phe Arg
 1 5 10 15

Glu Thr Lys Gly Leu Trp Glu Ser Asp Asp Arg Lys Lys His Leu Leu
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